DOCUMENT RESUME

ED 074 612 EA 004 971

AUTHOR	Oswalt, Felix E.
TITLE	Computerized Maintenance for Memphis Schools.
PUB DATE	64
NOTE	8p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Computer Programs; Cost Effectiveness; *Equipment Maintenance; *Management Systems; Manuals; Planning; Quality Control; *Repair; *School Maintenance; Statistical Data
IDENTIFIERS	Memphis School District

ABSTRACT

As a result of a survey made to identify and classify the emergency repairs being made in the Memphis Public Schools, an "Emergency Repair Manual" was developed to provide the basic guidelines and information required to obtain maximum benefits from 2-way radio with select call and paging provisions. Each emergency is coded on the emergency log and this code is recorded on a mark sense card for compiling statistical information in the Memphis Board of Education computer center. Monthly, semi-annual, and annual statistical reports identify frequently recurring problem areas requiring administrative action, either at an individual school or systemwide. This computerized school maintenance program is improving service, simplifying planning, and saving money. (Author/MLF)

FILMED FROM BEST AVAILABLE COPY

Felix E. Oswalt
1964

(P)

ED 074612

COMPUTERIZED MAINTENANCE FOR MEMPHIS SCHOOLS

by Felix E. Oswalt

Computerized maintenance is improving service, simplifying planning, and saving money in Memphis, Tennessee.

In 1962 a survey was made to identify emergency repairs and to classify for the purpose of establishing a routine that would improve service and reduce cost. One of the first problems was to define what was an emergency in terms of repairs to the physical plants. The definition which was agreed upon is as follows:

> An Emergency endangers the health or safety of people; presents a hazard to the building and contents or other physical property; breaches building security or disrupts the school program.

For a statistical background each repair on the emergency log for the previous two years was reviewed. This study identified the types of needed repair service, as well as the nature of emergencies. Cost figures revealed that the emergency service was costing two and one-half to three times as much as the same repair on a regular repair basis.

It became obvious that some type of "Emergency Repair Manual" would have to be developed if the goals were to be accomplished. Most emergencies occurred in connection with some physical object, such as a door, a window, a boiler, or wiring. The item involved was chosen as the first identification, and the second identification was the problem involving the item. The third identification was the type of service provided to clear up the emergency. The emergency repairs

EA 004 971

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

were classified under 47 item headings, with up to eight problems involving a single item. Twenty-one different types of service were found to be required for emergency repairs. Thus, emergencies could be coded:

Item	Problem	Service
28	1	15

These three numbers constitute the code for statistical purposes, and indicate a leaking gas pipe requiring plumbing service. Under each problem a check list was compiled to assure that every reasonable effort to correct the situation was made at the school, and that proper and adequate information was transmitted to the person that was to dispatch the service. In many cases the use of the check list eliminates the problem and restores service without having to request emergency service. Seven items of basic information were found to apply to all emergencies. These were placed at the front of the manual, instead of reproducing them on each problem sheet.

1. School or other location.
2. Name of person placing call and time received or transmitted.
3. Is the emergency of such a nature as to require immediate service, or can it be handled on the next day's work schedule?
4. Extent of hazard to people.
5. Hazard to building and contents, or other physical property.
6. Does this emergency disrupt the school program and to what extent?
7. Is this building still under warranty (less than one (1) year since final inspection of new construction)? Architect should be informed of any problems arising in new buildings during the warranty period so that he can take appropriate action to have corrections made on any problems that result from defects in materials and workmanship.

The basic purpose of the Manual as stated in the introduction:

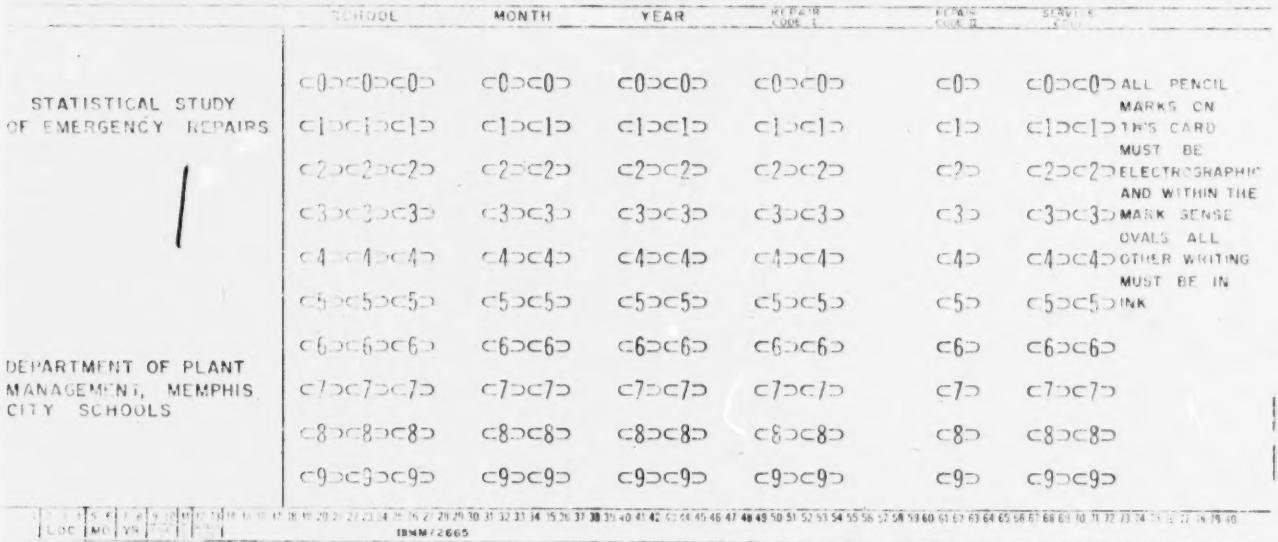
> The purpose of this guide is to simplify the process of transmitting the proper information on emergency repairs, and to reduce the loss of time and manpower which sometimes occurs due to dispatching the wrong service personnel.
>
> This guide will make it possible for a relatively inexperienced person to record the proper information, and dispatch service personnel for our most common types of emergencies. It should also be of value to the Supervising Building Engineer in making the proper checks and determinations before placing a call for emergency repairs.
>
> The information set forth in this guide should also be of considerable aid to our preventative maintenance program in the individual school. It is our hope that through revision of contents, and covering of new items we will be able to refine and otherwise improve our building maintenance program.

Implementation involved outlining of the program at principals' meetings, and more detailed explanation to the supervising building engineers. School principals as well as their supervising building engineers were provided with copies of the Emergency Repair Manual. The effectiveness and acceptance of the program was clearly identified shortly after the program was initiated. A high school principal with extensive seniority called the emergency desk, identified himself, gave his location, and followed with "I have a 43.1, send me a 7". It was not anticipated that schools would report emergencies in code, however it was

quickly identifiable as a case of a gas fired heating unit on which neither the burner nor the blower would operate. Service personnel as represented by Code 7 (electrician) were dispatched and service was restored.

The "Emergency Repair Manual" has provided the basic guidelines and information required to obtain maximum benefits from two-way radio with select call and paging provisions.

In the day to day use of the Manual each emergency is coded on the emergency log and this code is recorded on a mark sense card for compiling of statistical information in the Memphis Board of Education computer center. These individual cards are also marked to show the school location, month and year.


SCHOOL
MONTH
YEAR
REPAIR CODE I
REPAIR CODE II
SERVICE CODE
STATISTICAL STUDY OF EMERGENCY REPAIRS
DEPARTMENT OF PLANT MANAGEMENT, MEMPHIS CITY SCHOOLS
ALL PENCIL MARKS ON THIS CARD MUST BE ELECTROGRAPHIC AND WITHIN THE MARK SENSE OVALS ALL OTHER WRITING MUST BE IN INK
IBMM/2665

The statistical reports are designed to give administrative control through exception. The frequently recurring problems either at an individual school or system wide are quickly identified for administrative and supervisory action.

Summary of Statistics

MONTHLY:

Complete listing and identification of emergencies occurring at each school.

Complete listing of number of times a specific type service was required for each school.

Summary of system wide basis the same as listed for individual schools.

SEMI-ANNUAL AND ANNUAL:

Statistic are compiled on the same basis as the monthly.

Statistical information improves management procedures and reduces cost.

1. They quickly identify school plants where emergency maintenance is high. We can then analyze whether it is through judgement or type and condition of building.
2. High frequency of emergencies with a specific type or make of of equipment often indicates a need for replacing an item, or a need to change our specifications to seek better performance.
3. Indicates areas where development of new maintenance techniques are most needed and would result in maximum savings.
4. Emergency repairs must be done regardless of other maintenance needs. By graphically plotting emergency repairs by months in the various service areas, it is possible to determine when maintenance personnel will be available to do other maintenance work. A graph of this type also indicates the effectiveness of the program, when compared with previous years.

The following examples will indicate how these computer statistics have contributed to our overall maintenance program.

Example 1.

A six months statistical report revealed that six (6) emergency repairs were made on a clock and program machine at one of the older high schools. This exceptional high frequency quickly idnetified the problem. The equipment was inspected and evaluated in terms of need to rebuild or replace. The machine was replaced, and the situation was cleared up with considerable less confusion and unhappiness than we had previously been experiencing.

Example 2.

The statistical report on the first six months of the 1964-65 school year showed a 70% increase in sewer stoppages as compared to the same six (6) months of the 63-64 school year. As a result to this unusually high increase in emergencies, an all out study was undertaken to determine the cause and to develop methods of reducing the problem. The type and quality of paper goods which were supplied for restrooms was studied. Although our toilet tissue was breaking up satisfactorily when introduced into the sewer system, we found that an unusual amount of hand towels were being flushed into the sewer and were not breaking up. This prompted the action to better prevent the towels from being introduced into the sewer line, and an effort to find a reasonably priced paper towel that would be serviceable and also break up in water. Many of the problems were occurring in cafeteria kitchens where food waste disposals were in use. In order to minimize these problems, they began flushing the kitchen sewers by running additional water through the disposal and adjoining sinks for a few minutes after the disposal operation had been shut down for the day. Chemical solvents were used in

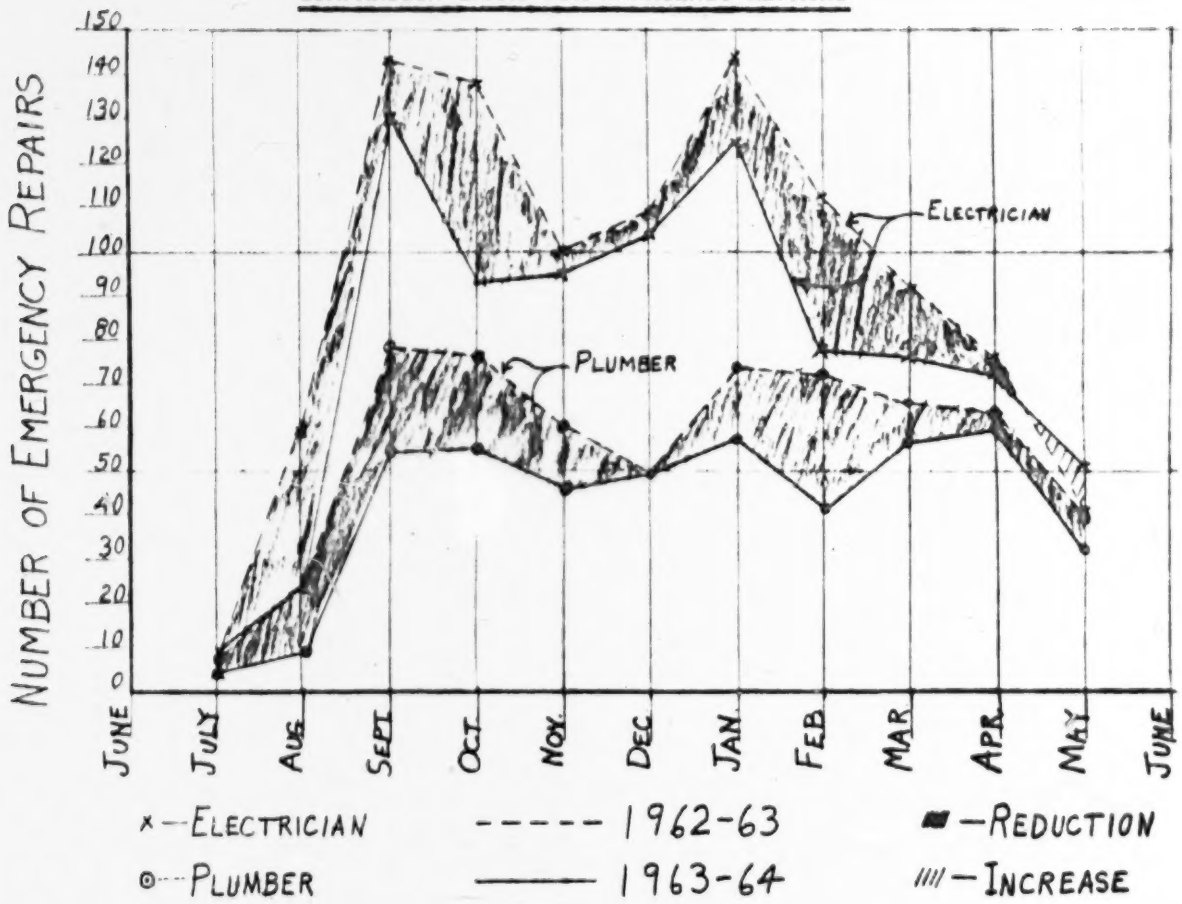
some of the lines on a periodic treatment basis. Problem sewers were identified and in some cases replacements were made where conditions warranted. The program appeared to have a satisfactory result. Even with continued growth in the system, the sewer stoppages were reduced by 19% the following year.

Example 3.

Statistics revealed that door problems were second only in number to sewer stoppages as a major classification of emergency repairs. A study of these repairs revealed a need to provide special reinforcing for doors and frames on high frequency openings. This reinforcing is now being provided both in new construction and replacements. Although growth makes our statistics meaningless in this area, major problems have shown a very marked reduction.

This program has been in effect for six years. Continued improvements and better acceptance by persons involved indicate that this instrument of management control is surpassing our original goals in terms of better service, simpler planning, and saving money. The effective rate of off-setting costs appears to be greater each year. Enrollment in the Memphis City Schools increased from 105,000 to 123,500 in the period from June 1963 to June 1968. The number of emergency repairs for the school ending in June 1963 was 2240, and for the year ending in June 1968 were 2325. This indicates that the improved management procedures have virtually off-set five years growth in emergency repairs during the period when an enrollment increase of 18,500 was experienced.

COMPARISON CHART FOR EMERGENCY REPAIRS



	July '62-May '63	July '63-May '64	Numerical Reduction	% Reduction
ELECTRICAL	1046	850	196	18.7%
PLUMBING	611	462	149	24.4%
TOTAL ALL AREAS	2240	1825	415	18.5%

Current trend indicates annual reduction of 425 Emergency Repairs. Some were re-classified and performed at lower cost. By using Emergency Manual, some were completely eliminated. Improving building maintenance accounts for some. This reduction in face of growth indicates annual saving in excess of $5,000.00.

Felix E. Oswalt

BOARD OF EDUCATION
MEMPHIS CITY SCHOOLS